Amendments to the Claims

Please amend the claims as follows.

Claims 1-20 (Cancelled)

21. (New) A method for remote gas sensing utilising a light source, a photodetector and a gas cell or zone containing gas or through which gas passes and through which light from the light source passes and is reflected back to the photodetector, including

passing light from the source to a gas cell or zone comprising a resonant optical cavity, and back to the photodetector via a single polarisation preserving optical fibre,

causing the returned light to pass through the optical fibre with a different polarisation to that of the transmitted light

splitting, between the light source and the optical fibre, the returned light from the transmitted light and directing the returned light to the photodetector, and

sensing the gas via the cavity ring-down time of the gas in the resonant cavity.

22. (New) A method according to claim 21 further comprising polarising the returned light exiting the gas so that it re-enters the optical fibre polarised orthogonal to the transmitted light.

23. (New) A method according to claim 21 including causing the gases to pass in the gas cell or zone between a mirror and a point at which light enters the gas cell, so that said mirror reflects light back through the gas and from the gas cell to the optical fibre.

24. (New) A method according to any one of claims 21 to 23 wherein the light source and photodetector are positioned remotely to the gas cell or zone.